

What is claimed is:

1. An absorbent composite, comprising:

a water-insoluble fiber; and

a superabsorbent material;

wherein the absorbent composite has an intake rate of at least about 1.9 cubic centimeters of 0.9% by weight sodium chloride aqueous solution per second at 80% absorbent composite saturation and a liquid lock-up fraction of at least about 0.70 at 50% superabsorbent material saturation determined using 0.9% by weight sodium chloride aqueous solution.

2. The absorbent composite of Claim 1, wherein the absorbent composite has an intake rate of at least about 2.3 cubic centimeters of 0.9% by weight sodium chloride aqueous solution per second at 80% absorbent composite saturation and a liquid lock-up fraction of at least about 0.75 at 50% superabsorbent material saturation determined using 0.9% by weight sodium chloride aqueous solution.

3. The absorbent composite of Claim 1, wherein the absorbent composite has an intake rate of at least about 2.7 cubic centimeters of 0.9% by weight sodium chloride aqueous solution per second at 80% absorbent composite saturation and a liquid lock-up fraction of at least about 0.80 at 50% superabsorbent material saturation determined using 0.9% by weight sodium chloride aqueous solution.

4. The absorbent composite of Claim 1, wherein the absorbent composite has an intake rate of at least about 3.3 cubic centimeters of 0.9% by weight

sodium chloride aqueous solution per second at 80% absorbent composite saturation and a liquid lock-up fraction of at least about 0.80 at 50% superabsorbent material saturation determined using 0.9% by weight sodium chloride aqueous solution.

5. The absorbent composite of Claim 1, wherein the water-insoluble fiber comprises a fiber selected from the group consisting of wood pulp fiber, cotton linter, thermoplastic fibers, elastic fibers, and combinations thereof.

6. The absorbent composite of Claim 1, wherein the water-insoluble fiber is a hydrophilic fiber.

7. The absorbent composite of Claim 6, wherein the water-insoluble fiber is a hydrophilically treated hydrophobic fiber.

8. The absorbent composite of Claim 1, wherein the absorbent composite is selected from the group comprising an airformed absorbent composite, a wetformed absorbent composite, and a freeze-dried composite.

9. The absorbent composite of Claim 1, wherein the superabsorbent material comprises a material selected from the group consisting of particles, fibers, nonwoven, aggregate, printed, coated, or combinations thereof.

10. The absorbent composite of Claim 9, wherein the superabsorbent material comprises at least one of a crosslinked anionic and a crosslinked cationic polymers.

11. The absorbent composite of Claim 10, wherein the superabsorbent material comprises a material selected from the group consisting of sodium-polyacrylate, carboxymethyl cellulose, carboxymethyl polysaccharides, polyaspartic acid salt, maleic anhydride-isobutylene copolymer, chitosan salts, polyquarternary ammonium salts, polyvinyl amines, and combinations thereof.

12. The absorbent composite of Claim 1, wherein the absorbent composite comprises the superabsorbent material in a weight amount of about 10 to 70 weight percent based on total weight of the absorbent composite.

13. The absorbent composite of Claim 1, further comprising a binder material.

14. The absorbent composite of Claim 13, wherein the binder material comprises a water-insoluble polymer.

15. The absorbent composite of Claim 14, wherein the binder material is selected from the group consisting of poly(aminoamide) epichlorohydrin polymer, latex, and combinations thereof.

16. The absorbent composite of Claim 14, wherein the binder material comprises a water-insoluble, water-swellaable polymer.

17. The absorbent composite of Claim 16, wherein the binder material comprises a material selected from the group consisting of sodium-polyacrylate, carboxymethyl cellulose, chitosan salt, and combinations thereof.

18. The absorbent composite of Claim 14, wherein the binder comprises a thermoplastic fiber.

19. The absorbent composite of Claim 18, wherein the binder material comprises a material selected from the group consisting of polyethylene fibers, polypropylene fibers, polyester fibers, nylon fibers, and combinations thereof.

20. The absorbent composite of Claim 13, wherein the binder material is elastic.

21. The absorbent composite of Claim 13, wherein the binder material is water-soluble before a treatment and water-swellaable and water-insoluble after the treatment.

22. The absorbent composite of Claim 21, wherein the treatment comprises a treatment selected from the group consisting of heat, ultraviolet radiation,

microwave radiation, steam, high pressure, electronic beam radiation, organic solvents, humidity treatment, and combinations thereof.

23. A freeze-dried composite, comprising:

a water-insoluble fiber; and

a superabsorbent material;

wherein the freeze-dried composite has an intake rate of at least about 1.9 cubic centimeters of 0.9% by weight sodium chloride aqueous solution per second at 80% freeze-dried composite saturation and a liquid lock-up fraction of at least about 0.70 at 50% superabsorbent material saturation determined using 0.9% by weight sodium chloride aqueous solution.

24. The freeze-dried composite of Claim 23, wherein the freeze-dried composite has an intake rate of at least about 2.3 cubic centimeters of 0.9% by weight sodium chloride aqueous solution per second at 80% freeze-dried composite saturation and a liquid lock-up fraction of at least about 0.75 at 50% superabsorbent material saturation determined using 0.9% by weight sodium chloride aqueous solution.

25. The freeze-dried composite of Claim 23, wherein the freeze-dried composite has an intake rate of at least about 2.7 cubic centimeters of 0.9% by weight sodium chloride aqueous solution per second at 80% freeze-dried composite saturation and a liquid lock-up fraction of at least about 0.80 at 50% superabsorbent material saturation determined using 0.9% by weight sodium chloride aqueous solution.

26. The freeze-dried composite of Claim 23, wherein the freeze-dried composite has an intake rate of at least about 3.3 cubic centimeters of 0.9% by weight sodium chloride aqueous solution per second at 80% freeze-dried composite saturation and a liquid lock-up fraction of at least about 0.80 at 50% superabsorbent material saturation determined using 0.9% by weight sodium chloride aqueous solution.

27. The freeze-dried composite of Claim 23, wherein the water-insoluble fiber comprises a fiber selected from the group consisting of wood pulp fiber, cotton linter, thermoplastic fibers, elastic fibers, and combinations thereof.

28. The freeze-dried composite of Claim 23, wherein the superabsorbent material comprises a material selected from the group consisting of sodium-polyacrylate, carboxymethyl cellulose, carboxymethyl polysaccharides, polyaspartic acid salt, maleic anhydride-isobutylene copolymer, chitosan salts, polyquaternary ammonium salts, polyvinyl amines, and combinations thereof.

29. The freeze-dried composite of Claim 23, wherein the freeze-dried composite comprises the superabsorbent material in a weight amount of about 10 to 70 weight percent based on total weight of the absorbent composite.

30. The freeze-dried composite of Claim 23, further comprising a binder material.

31. An airformed absorbent composite, comprising:

a water-insoluble fiber; and

a superabsorbent material;

wherein the airformed absorbent composite has an intake rate of at least about 1.9 cubic centimeters of 0.9% by weight sodium chloride aqueous solution per second at 80% airformed absorbent composite saturation and a liquid lock-up fraction of at least about 0.70 at 50% superabsorbent material saturation determined using 0.9% by weight sodium chloride aqueous solution.

32. The airformed absorbent composite of Claim 31, wherein the airformed absorbent composite has an intake rate of at least about 2.3 cubic centimeters of 0.9% by weight sodium chloride aqueous solution per second at 80% airformed absorbent composite saturation and a liquid lock-up fraction of at least about 0.75 at 50% superabsorbent material saturation determined using 0.9% by weight sodium chloride aqueous solution.

33. The airformed absorbent composite of Claim 31, wherein the airformed absorbent composite has an intake rate of at least about 2.7 cubic centimeters of 0.9% by weight sodium chloride aqueous solution per second at 80% airformed absorbent composite saturation and a liquid lock-up fraction of at least about 0.80 at 50% superabsorbent material saturation determined using 0.9% by weight sodium chloride aqueous solution.

34. The airformed absorbent composite of Claim 31, wherein the airformed absorbent composite has an intake rate of at least about 3.3 cubic centimeters of

0.9% by weight sodium chloride aqueous solution per second at 80% airformed absorbent composite saturation and a liquid lock-up fraction of at least about 0.80 at 50% superabsorbent material saturation determined using 0.9% by weight sodium chloride aqueous solution.

35. The airformed absorbent composite of Claim 31, wherein the water-insoluble fiber comprises a fiber selected from the group consisting of wood pulp fiber, cotton linter, thermoplastic fibers, elastic fibers, and combinations thereof.

36. The airformed absorbent composite of Claim 31, wherein the superabsorbent material comprises a material selected from the group consisting of sodium-polyacrylate, carboxymethyl cellulose, carboxymethyl polysaccharides, polyaspartic acid salt, maleic anhydride-isobutylene copolymer, chitosan salts, polyquarternary ammonium salts, polyvinyl amines, and combinations thereof.

37. The airformed absorbent composite of Claim 31, wherein the airformed absorbent composite comprises the superabsorbent material in a weight amount of about 10 to 70 weight percent based on total weight of the absorbent composite.

38. The airformed absorbent composite of Claim 31, further comprising a binder material.

39. A wetformed absorbent composite, comprising:
a water-insoluble fiber; and

a superabsorbent material;

wherein the wetformed absorbent composite has an intake rate of at least about 1.9 cubic centimeters of 0.9% by weight sodium chloride aqueous solution per second at 80% wetformed absorbent composite saturation and a liquid lock-up fraction of at least about 0.70 at 50% superabsorbent material saturation determined using 0.9% by weight sodium chloride aqueous solution.

40. The wetformed absorbent composite of Claim 39, wherein the wetformed absorbent composite has an intake rate of at least about 2.3 cubic centimeters of 0.9% by weight sodium chloride aqueous solution per second at 80% wetformed absorbent composite saturation and a liquid lock-up fraction of at least about 0.75 at 50% superabsorbent material saturation determined using 0.9% by weight sodium chloride aqueous solution.

41. The wetformed absorbent composite of Claim 39, wherein the wetformed absorbent composite has an intake rate of at least about 2.7 cubic centimeters of 0.9% by weight sodium chloride aqueous solution per second at 80% wetformed absorbent composite saturation and a liquid lock-up fraction of at least about 0.80 at 50% superabsorbent material saturation determined using 0.9% by weight sodium chloride aqueous solution.

42. The wetformed absorbent composite of Claim 39, wherein the wetformed absorbent composite has an intake rate of at least about 3.3 cubic centimeters of 0.9% by weight sodium chloride aqueous solution per second at 80% wetformed absorbent

composite saturation and a liquid lock-up fraction of at least about 0.80 at 50% superabsorbent material saturation determined using 0.9% by weight sodium chloride aqueous solution.

43. The wetformed absorbent composite of Claim 39, wherein the water-insoluble fiber comprises a fiber selected from the group consisting of wood pulp fiber, cotton linter, thermoplastic fibers, elastic fibers, and combinations thereof.

44. The wetformed absorbent composite of Claim 39, wherein the superabsorbent material comprises a material selected from the group consisting of sodium-polyacrylate, carboxymethyl cellulose, carboxymethyl polysaccharides, polyaspartic acid salt, maleic anhydride-isobutylene copolymer, chitosan salts, polyquarternary ammonium salts, polyvinyl amines, and combinations thereof.

45. The wetformed absorbent composite of Claim 39, wherein the wetformed absorbent composite comprises the superabsorbent material in a weight amount of about 10 to 70 weight percent based on total weight of the absorbent composite.

46. The wetformed absorbent composite of Claim 39, further comprising a binder material.

47. An absorbent composite comprising a superabsorbent material and a non-fibrous structure, wherein the absorbent composite has an intake rate of at least about 1.9 cubic centimeters of 0.9% by weight sodium chloride aqueous solution per second at

80% absorbent composite saturation and a liquid lock-up fraction of at least about 0.70 at 50% superabsorbent material saturation determined using 0.9% by weight sodium chloride aqueous solution.

48. The absorbent composite of Claim 47, wherein the absorbent composite has an intake rate of at least about 2.3 cubic centimeters of 0.9% by weight sodium chloride aqueous solution per second at 80% absorbent composite saturation and a liquid lock-up fraction of at least about 0.75 at 50% superabsorbent material saturation determined using 0.9% by weight sodium chloride aqueous solution.

49. The absorbent composite of Claim 47, wherein the absorbent composite has an intake rate of at least about 2.7 cubic centimeters of 0.9% by weight sodium chloride aqueous solution per second at 80% absorbent composite saturation and a liquid lock-up fraction of at least about 0.80 at 50% superabsorbent material saturation determined using 0.9% by weight sodium chloride aqueous solution.

50. The absorbent composite of Claim 47, wherein the absorbent composite has an intake rate of at least about 3.3 cubic centimeters of 0.9% by weight sodium chloride aqueous solution per second at 80% absorbent composite saturation and a liquid lock-up fraction of at least about 0.80 at 50% superabsorbent material saturation determined using 0.9% by weight sodium chloride aqueous solution.

51. The absorbent composite of Claim 47, wherein the superabsorbent material comprises a material selected from the group consisting of particles, fibers, nonwoven, aggregate, printed, coated, or combinations thereof.

52. The absorbent composite of Claim 47, wherein the superabsorbent material comprises a material selected from the group consisting of sodium-polyacrylate, carboxymethyl cellulose, carboxymethyl polysaccharides, polyaspartic acid salt, maleic anhydride-isobutylene copolymer, chitosan salts, polyquarternary ammonium salts, polyvinyl amines, and combinations thereof.

53. The absorbent composite of Claim 47, wherein the absorbent composite comprises the superabsorbent material in a weight amount of about 10 to 70 weight percent based on total weight of the absorbent composite.

54. The absorbent composite of Claim 47, further comprising a binder material.